PATENTS
112055-0073U
17732-67070.00

REMARKS

In the Office Action dated 12/22/2004, the Examiner rejected claims 4-7 and 15-17 under 35 U.S.C. 112, second paragraph, as being indefinite, reciting the lack of antecedent in claims 4, 6 and 15 of "the first and the second current receiving circuits."

The antecedent issue has been corrected by the present amendment.

Claims 1, 2, 6, 7, 9-12, 15,16 and 18 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 5,592,510 to Van Brunt et al. (Van Brunt).

The Office Action on page 3, first paragraph states that the "means for sensing the unequal currents," (the last limitation of original claims 1 and 10) is anticipated by item 210 in Van Brunt. The Office Action continues citing item 210 as anticipating the differential current amplifiers of claim 6-7 and 15-16. The Office Action cites Van Brunt's FIG. 8 as showing the unequal currents and the 210 receiver.

The present amendment amends that element in claim 1 (and similarly in claim 10) to now read:

"means for sensing and amplifying the unequal currents."

Van Brunt's item 210 is a differential voltage amplifier – not a current amplifier.

In the present invention in the embodiment of FIG. 7, there is a differential current receiver, not a voltage sensing amplifier. The received currents are amplified, and then the amplified current difference is converted to a voltage signal. The benefits of the handling of the current amplifier are critical to the advantages of the present invention – see page 4, lines 9-11, and page 6, lines 10- 19. The advantages of current sensing and amplifying are nullified by using a voltage amplifier circuit as Van Brunt teaches.

This claimed current amplifying (and amplifier) distinguishes Van Brunt.

In addition, as further amended, independent claim 1 (and similarly in claim 10) includes the following limitations:

means for selectively driving unequal logic signal currents through the first and the second signal carrying conductors, respectively,

No new matter is added, see Summary, page 4, lines 5-11. Please note that this section refers to the unequal currents are created by logic data signals. Also see page 5, lines 19-25; and page 7, lines 16-23. Also, please see page 1, lines 9-14, where the sending of "logic...signals" over transmission lines while maintaining "fidelity" by "impedance matching" defines the logic signals as the high speed data signals where impedance matching is important to reduce ringing, etc.

The import of these parts of the original specification and the amendment is that the unequal currents are formed from the "logic signals," that is the high speed data signal that are being transmitted over terminated matched transmission lines, and received and amplified by current amplifiers that happen to not require any common mode circuitry, as discussed below.

Van Brunt defines his FIG. 8 as a driver circuit "for transmission of a "1" in common mode (speed signal)." See column 11, line 66. Van Brunt is not transmitting unequal logic signals (data signals), he is driving a common mode bias voltage signal through the terminating resistors to create a DC common level at one end of the transmission line. Please note that Van Brunt's title, his SUMMARY, his entire patent is directed to this common mode circuitry. That common mode signal is a "speed signal" to comply with an IEEE specification. Van Brunt's bias voltage forces unequal currents in the two lines of the transmission line, he is NOT teaching driving data signals of unequal currents to gain the advantages of the present invention. Van Brunt is conforming to the IEEE spec. by creating and teaching a common mode signal on the transmission lines. Moreover, there is no incentive or advantage or problem indicated in Van Brunt that will be addressed by driving unequal data signal currents through a transmission line.

Please note that on page 6, lines 19-29, the present invention specifically disclaims the need for common mode circuitry. The present invention does not provide any

means for introducing the common bias of Van Brunt at the terminating resistors of the present invention. The present invention only shows the terminating resistor as a single resistor. Since Van Brunt only shows the unequal currents as part of the common signal circuitry (to comply with the IEEE spec.), and the present invention specifically denies the use of common mode signals, the Van Brunt reference and the present invention claims are inconsistent with each other.

Since Van Brunt lacks the current sensing and amplifying, and Van Brunt lacks unequal data signal currents, it is respectfully requested that the Van Brunt reference be removed as a reference against the present invention.

On page 3, the Office Action rejects claims 1-7, 9-16 and 18 under U.S.C. 103(a) as unpatentable over U.S. Pat. No. 6,448,815 to Talbot et al. (Talbot) in view of Japanese publication JP 07-307661 to Mitsuo (Mitsuo).

As the Office Action, on page 4, acknowledges, Talbot does not disclosure the current receivers of original claims 1 and 10. The Office Action continues stating that Mitsuo, in his FIG. 11, supplies the claimed receiver circuit. As now amended, claims 1 (and claim 10) includes current amplifying.

Talbot shows a transmission line driver 20 and receiver 26. The driver shows R1 and R2 that can be programmable as shown in FIG. 2. The receiver has a terminating resistor R3 that is programmable as shown in FIG. 3. Note that at the bottom of column 4, Talbot references "R3 is in the order of 100 ohms." That is a typical transmission line (e.g. a twisted pair or co-ax) characteristic impedance. Talbot requires terminating the transmission line.

Mitsuo on page 1 or 13 states in section 0001 that his invention applies "between each block for example, in an LSI chip, and relates to the signal transfer circuit...." On

page 13 Mitsuo discloses that the results of his invention is the reduction in power of an LSI chip by reducing voltage levels. Nowhere does Mitsuo suggest that a terminated transmission line is required or needed or desirable. For that matter, since a terminated transmission line (terminating resistors are of low value) would consume power (and there is no need for considering a transmission line in an LSI chip since the distances are so small), Mitsuo, in fact, teaches against use of terminated transmission lines since his goal is reducing power dissipation..

Talbot has many components for the programmable current source and the programmable terminating resistor. If Talbot was concerned about power dissipation, and Talbot never mentions such a goal, Talbot's voltage receiver 36 and the logic switches in the driver would consume very little power. The power dissipation is in the voltage drops across the programming resistors and the transmission line terminating resistor (note these resistances in Talbot may be the internal resistances of FET's), and that is the logical place for Talbot to reduce power – by reducing the voltages and/or currents across these resistors. Talbot would have no incentive to look at Mitsuo's receiver.

Talbot discloses a voltage amplifier that is commonly used at the terminated end of a transmission line. There is no problems or advantages stated or inferred in Talbot that would lead him to reduce power in the receiver electronics.

Since the independent claims 1 and 10, and therefore all the dependent claims. Distinguish Van Brunt and Talbot, all the claims in the present application are allowable, and a Notice of Allowance is requested.

PATENTS
112055-0073U
17732-67070.00

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,

Edwin H. Paul

Edwin H. Paul
Reg. No. 31,405
CESARI AND MCKENNA, LLP
88 Black Falcon Avenue
Boston, MA 02210-2414
(617) 951-2500